

IN THE CLAIMS:

1. (Currently Amended) A method, comprising:
an apparatus reporting a quality of a streaming of at least one media stream based on at least one selected quality metric, wherein said at least one selected quality metric is a quality of experience metric that is at least partially based on a decision by said apparatus whether at least one frame of said at least one media stream is a good frame, wherein said reporting of said quality of said streaming is further based on a quality metrics class defining how this decision is made, said quality metrics class selected by said apparatus from a pre-defined set of at least two quality metrics classes, ~~and~~ wherein each quality metrics class in said pre-defined set of at least two quality metrics classes defines a different set of rules on how to decide whether a frame of said at least one media stream is a good frame.
2. (Currently Amended) The method according to claim 1, wherein selection of said quality metrics class comprises negotiating said quality metrics class between a client of said apparatus to which said media stream is streamed and a server to which said quality of said streaming is reported.
3. (Previously Presented) The method according to claim 1, wherein said streaming is controlled by a protocol that defines a quality metrics class field within at least one protocol data unit, wherein said quality metrics class field is capable of identifying each quality metrics class of said pre-defined set of at least two quality metrics classes.
4. (Previously Presented) The method according to claim 3, wherein said quality metrics class field is located in a header section of said at least one protocol data unit.
5. (Cancelled)
6. (Cancelled)

7. (Previously Presented) The method according to claim 1, wherein said set of rules defined by at least one of said quality metrics classes comprises:

deciding an earlier of

a completely received I-frame of said at least one media stream or

an N-th completely received frame of said at least one media stream after

a last frame error or loss

to be a good frame, wherein N is an integer that is either

signalled or defaults to ∞ in case of a video frame or

1 in case of an audio frame, and

deciding a frame of said at least one media stream following a good frame to be a good frame, if said frame is completely received, and said frame and all subsequent frames until the next good frame to be corrupted, otherwise.

8. (Currently Amended) The method according to claim 1, wherein said set of rules defined by at least one of said quality metric classes comprises said apparatus:

deciding a coded frame of said at least one media stream to be a good frame according to an error tracking algorithm.

9. (Currently Amended) The method according to claim 8, wherein said set of rules defined by at least one of said quality metrics classes comprises said apparatus:

deciding an intra-coded frame of said at least one media stream to be a good frame, if it is completely received, and to be a corrupted frame otherwise, or

deciding a predictively coded frame of said at least one media stream to be a good frame, if it is completely received and if all of prediction reference samples of said predictively coded frame belong to good frames, and to be a corrupted frame otherwise.

10. (Currently Amended) The method according to claim 1, wherein said set of rules defined by at least one of said quality metrics classes comprises said apparatus:

deciding a coded frame of said at least one media stream to be a good frame according to a decoding quality evaluation algorithm.

11. (Currently Amended) The method according to claim 10, wherein said set of rules defined by at least one of said quality metrics classes comprises said apparatus:

deciding an intra-coded frame of said at least one media stream to be a good frame, if it is completely received, and to be a corrupted frame otherwise, or

deciding a predictively coded frame of said at least one media stream to be a good frame, if it is completely received and all prediction reference samples of said predictively coded frame belong to good frames,

or

if at least a part of said frame is completely received, all of prediction reference samples of said completely received parts of said frame belong to good frames, and all of concealed parts of said frame are considered as good, wherein said concealed parts of said frame are obtained by applying an error concealment algorithm to lost or erroneous parts of a decoded version of said frame, and wherein said concealed parts are considered as good if an average boundary difference between said concealed parts and surrounding completely received and decoded parts of said frame is below a threshold.

12. (Previously Presented) The method according to claim 1, wherein said streaming is controlled by a protocol that is a real-time streaming protocol in combination with a session description protocol in the context of a packet-switched streaming service of a third generation mobile communications system.

13. (Previously Presented) The method according to claim 12, wherein said session description protocol comprises at least one session description protocol attribute that defines at least one quality metrics class field, wherein said quality metrics class field is capable of identifying each quality metrics class of said pre-defined set of at least two quality metrics classes.

14. (Previously Presented) The method according to claim 13, wherein said real-time streaming protocol is used to negotiate a quality metrics class between a client to which

said media stream is streamed and a server to which said quality of said streaming is reported at least partially based on said session description protocol attribute.

15. (Previously Presented) The method according to claim 14, wherein said real-time streaming protocol uses a DESCRIBE method for said negotiation.

16. (Cancelled)

17. (Currently Amended) A non-transitory computer readable storage medium comprising a computer program with instructions operable to cause a processor to report a quality of a streaming of at least one media stream based on at least one selected quality metric, wherein said at least one selected quality metric is a quality of experience metric that is at least partially based on a decision whether at least one frame of said at least one media stream is a good frame, wherein said reporting of said quality of said streaming is further based on a quality metrics class defining how this decision is made, said quality metrics class, selected from a pre-defined set of at least two quality metrics classes, ~~and~~ wherein each quality metrics class in said pre-defined set of at least two quality metrics classes defines a different set of rules on how to decide whether a frame of said at least one media stream is a good frame.

18. (Currently Amended) A streaming system, comprising:

at least one client, and

at least one server,

wherein at least one media stream is streamed to said at least one client, wherein said streaming is controlled by a protocol that is operated between said at least one client and said at least one server, and wherein a quality of said streaming is reported to said at least one server based on at least one selected quality metric, wherein said at least one selected quality metric is a quality of experience metric that is at least partially based on a decision whether at least one frame of said at least one media stream is a good frame, wherein said reporting of said quality of said streaming is further based on a quality metrics class defining how this decision is made, said quality metrics class, selected from

a pre-defined set of at least two quality metrics classes, ~~and~~ wherein each quality metrics class in said pre-defined set of at least two quality metrics classes defines a different set of rules on how to decide whether a frame of said at least one media stream is a good frame.

19. (Currently Amended) An apparatus, comprising:

a transmitter configured to report a quality of a streaming of at least one media stream based on at least one selected quality metric, wherein said at least one selected quality metric is a quality of experience metric that is at least partially based on a decision whether at least one frame of said at least one media stream is a good frame, and said transmitter configured to report said quality of said streaming further based on a quality metrics class defining how this decision is made, said quality metrics class selected from a pre-defined set of at least two quality metrics classes, wherein each quality metrics class in said pre-defined set of at least two quality metrics classes defines a different set of rules on how to decide whether a frame of said at least one media stream is a good frame.

20. (Currently Amended) An apparatus, comprising:

a receiver configured to receive a reported quality of a streaming of at least one media stream, said quality reported based on at least one selected quality metric, wherein said at least one selected quality metric is a quality of experience metric that is at least partially based on a decision whether at least one frame of said at least one media stream is a good frame, said quality of said streaming further reported based on a quality metrics class defining how this decision is made, said quality metrics class selected from a pre-defined set of at least two quality metrics classes, wherein each quality metrics class in said pre-defined set of at least two quality metrics classes defines a different set of rules on how to decide whether a frame of said at least one media stream is a good frame.

21. (Cancelled)

22. (Currently Amended) An apparatus, comprising:

a streaming quality monitor configured to monitor a quality of a streaming of at least one media stream according to at least one quality metric and a quality metrics class; and

a real-time streaming protocol entity configured to select said at least one quality metric, wherein said at least one selected quality metric is a quality of experience metric that is at least partially based on a decision whether at least one frame of said at least one media stream is a good frame, said quality metrics class defining how this decision is made, configured to select said quality metrics class from a pre-defined set of at least two quality metrics classes, wherein each quality metrics class in said pre-defined set of at least two quality metrics classes defines a different set of rules on how to decide whether a frame of said at least one media stream is a good frame, and configured to report said quality of said streaming of said at least one media stream based on said at least one selected quality metric and said selected quality metrics class.

23. (Currently Amended) An apparatus, comprising:

a quality data processing instance for evaluation and analysis configured to improve quality of a streaming application by enhancing a data rate of the application depending upon frequency of re-buffering events; and

a real-time streaming protocol entity configured to receive a reported quality of a streaming of at least one media stream said quality reported based on at least one selected quality metric, wherein said at least one selected quality metric is a quality of experience metric that is at least partially based on a decision whether at least one frame of said at least one media stream is a good frame, said quality of said streaming further reported based on a quality metrics class defining how this decision is made, said quality metrics class selected from a pre-defined set of at least two quality metrics classes, wherein each quality metrics class in said pre-defined set of at least two quality metrics classes defines a different set of rules on how to decide whether a frame of said at least one media stream is a good frame.

24. (Currently Amended) A method, comprising:

an apparatus receiving a reported quality of a streaming of at least one media stream said quality reported based on at least one selected quality metric, wherein said at least one selected quality metric is a quality of experience metric that is at least partially based on a decision made by said apparatus whether at least one frame of said at least one media stream is a good frame, said quality of said streaming further reported based on a quality metrics class defining how this decision is made, said quality metrics class selected by said apparatus from a pre-defined set of at least two quality metrics classes, wherein each quality metrics class in said pre-defined set of at least two quality metrics classes defines a different set of rules on how to decide whether a frame of said at least one media stream is a good frame.

25. (Currently Amended) The apparatus according to claim 19, wherein selection of said quality metrics class comprises negotiating said quality metrics class between a client of said apparatus to which said media stream is streamed and a server to which said quality of said streaming is reported.

26. (Previously Presented) The apparatus according to claim 19, wherein said streaming is controlled by a protocol that defines a quality metrics class field within at least one protocol data unit, wherein said quality metrics class field is capable of identifying each quality metrics class of said pre-defined set of at least two quality metrics classes.

27. (Previously Presented) The apparatus according to claim 26, wherein said quality metrics class field is located in a header section of said at least one protocol data unit.

28. (Previously Presented) The apparatus according to claim 19, wherein said set of rules defined by at least one of said quality metrics classes comprises:

deciding an earlier of

a completely received I-frame of said at least one media stream or

an N-th completely received frame of said at least one media stream after

a last frame error or loss

to be a good frame, wherein N is an integer that is either

signalled or defaults to ∞ in case of a video frame or
1 in case of an audio frame, and
deciding a frame of said at least one media stream following a good frame to be a good
frame, if said frame is completely received, and said frame and all subsequent frames
until the next good frame to be corrupted, otherwise.

29. (Previously Presented) The apparatus according to claim 19, wherein said set of rules
defined by at least one of said quality metric classes comprises:

deciding a coded frame of said at least one media stream to be a good frame
according to an error tracking algorithm.

30. (Previously Presented) The apparatus according to claim 29, wherein said set of rules
defined by at least one of said quality metrics classes comprises:

deciding an intra-coded frame of said at least one media stream to be a good
frame, if it is completely received at said apparatus, and to be a corrupted frame
otherwise, or

deciding a predictively coded frame of said at least one media stream to be a good
frame, if it is completely received at said apparatus and if all of prediction reference
samples of said predictively coded frame belong to good frames, and to be a corrupted
frame otherwise.

31. (Previously Presented) The apparatus according to claim 19, wherein said set of rules
defined by at least one of said quality metrics classes comprises:

deciding a coded frame of said at least one media stream to be a good frame
according to a decoding quality evaluation algorithm.

32. (Previously Presented) The apparatus according to claim 31, wherein said set of rules
defined by at least one of said quality metrics classes comprises:

deciding an intra-coded frame of said at least one media stream to be a good
frame, if it is completely received at said apparatus, and to be a corrupted frame
otherwise, or

deciding a predictively coded frame of said at least one media stream to be a good frame, if it is completely received at said apparatus and all prediction reference samples of said predictively coded frame belong to good frames,

or

if at least a part of said frame is completely received, all of prediction reference samples of said completely received parts of said frame belong to good frames, and all of concealed parts of said frame are considered as good, wherein said concealed parts of said frame are obtained by applying an error concealment algorithm to lost or erroneous parts of a decoded version of said frame, and wherein said concealed parts are considered as good if an average boundary difference between said concealed parts and surrounding completely received and decoded parts of said frame is below a threshold.

33. (Previously Presented) The apparatus according to claim 19, wherein said streaming is controlled by a protocol that is a real-time streaming protocol in combination with a session description protocol in the context of a packet-switched streaming service of a third generation mobile communications system.

34. (Previously Presented) The apparatus according to claim 33, wherein said session description protocol comprises at least one session description protocol attribute that defines at least one quality metrics class field, wherein said quality metrics class field is capable of identifying each quality metrics class of said pre-defined set of at least two quality metrics classes.

35. (Previously Presented) The apparatus according to claim 34, wherein said real-time streaming protocol is used to negotiate a quality metrics class at least partially based on said session description protocol attribute.

36. (Previously Presented) The apparatus according to claim 35, wherein said real-time streaming protocol uses a DESCRIBE method for said negotiation.

37. (Previously Presented) The apparatus according to claim 19, wherein said apparatus is a client to which said media stream is streamed, wherein said streaming is controlled by a protocol operated between said client and a server, and wherein said quality of said streaming is reported to said server.

38. (Previously Presented) The apparatus according to claim 19, wherein said media stream is a continuous media stream.

39. (Previously Presented) The apparatus according to claim 20, wherein said apparatus is a server, wherein said at least one media stream is streamed to a client, wherein said streaming is controlled by a protocol operated between said client and said server, and wherein said quality of said streaming is reported to said server.

40. (Previously Presented) The method according to claim 1, wherein said at least one media stream is streamed to a client, wherein said streaming is controlled by a protocol operated between said client and a server, and wherein said quality of said streaming is reported to said server.

41. (Currently Amended) The method according to claim 24, wherein said at least one media stream is streamed to a client of said apparatus, wherein said streaming is controlled by a protocol operated between said client of said apparatus and a server, and wherein said quality of said streaming is reported to said server.